

Last revised: January 2000

[Summary Status](#)

[Landings and Abundance Trends](#)

[Landings Data](#)

White Hake

by

Katherine A. Sosebee

The white hake, *Urophycis tenuis*, occurs from Newfoundland to Southern New England and is common on muddy bottom throughout the Gulf of Maine. Depth distribution of white hake varies by age and season; juveniles typically occupy shallower areas than adults, but individuals of all ages tend to move inshore or shoalward in summer, dispersing to deeper areas in winter. Most trawl catches are taken at depths of 110 m (60 fathoms) or more, although hake are taken as shallow as 27 m (15 fathoms) by gillnetting. Small white hake are difficult to distinguish from red hake, *Urophycis chuss*, resulting in an unknown (but presumed small) degree of bias in reported nominal catches.

Larval distributions indicate the presence of two spawning groups in the Gulf of Maine, Georges Bank and Scotian Shelf region, one which spawns in deep water on the continental slope in late winter and early spring and a second which spawns on the Scotian Shelf in summertime. Populations in U.S. waters appears to be supported by both spawning events, but individuals are not distinguishable in commercial landings. White hake attain a maximum length of 135 cm (53 in.) and weights of up to 21 kg (46 lb), with females being larger. Ages of more than 20 years have been documented. Juveniles feed primarily upon shrimp and other crustaceans, but adults feed almost exclusively on fish, including juveniles of their own species.

The principal fishing gears used to catch white hake are otter trawls and gill nets. Recreational and distant-water fleet catches have been insignificant, and Canadian catches have generally been minor. The fishery is managed under the New England Fishery Management Council's Multispecies Fishery Management Plan (FMP). Under this FMP white hake are included in a complex of 15 groundfish species which has been managed by time/area closures, gear restrictions, minimum size limits and, since 1994, direct effort controls including a moratorium on permits and days-at-sea restrictions under Amendments 5 and 7 to the FMP. Amendment 9 established rebuilding targets, and defines control rules which specify target fishing mortality rates and corresponding rebuilding time horizons. The goal of the management program is to reduce fishing mortality to levels which will allow stocks within the complex to initially rebuild above minimum biomass thresholds, and ultimately to remain at or near target biomass levels.

United States landings have primarily been taken in the western Gulf of Maine, both incidentally to directed operations for other demersal species and as an intended component in mixed-species fisheries. Since 1968, the U.S. fishery has accounted for approximately 90 percent of the Gulf of

Maine-Georges Bank white hake catch. Canadian landings averaged 600 mt from 1977-1991 and then increased to 1,700 mt in 1993, but have since declined to less than 300 mt.

Total landings of white hake increased from about 1,000 mt during the late 1960s to 8,300 mt in 1985. Landings then declined to 5,100 mt in 1989, rose sharply to 9,600 mt in 1992, and have since steadily declined to levels not seen since the early 1970s. Total landings in 1998 were 2,600 mt, a 30% decline from 1996. The increase throughout the 1970s and early 1980s reflects both a general increase in incidental catches associated with expansion of the New England otter trawl fleet and an increase in directed fishing effort.

The NEFSC autumn bottom trawl survey biomass index fluctuated about a relatively high level during the 1970s and 1980s but has declined in recent years to near record low values. The most recent 3-year average of the NEFSC autumn survey biomass index (5.1 kg per tow) is below the former overfishing definition (25th percentile of a 3-year moving average of NEFSC autumn biomass indices) and is the lowest since 1968. Fully recruited fishing mortality has been above 0.6 since 1985 and in 1997 was estimated to be 1.15. The projected fishing mortality estimate for 1998 was stable at 1.09. Spawning stock biomass peaked in 1986 at 13,100 mt and has declined to a record-low level of 2,700 mt in 1998. Recruitment at age 1 has varied from 1.5 million fish (1994 year class) to 10.4 million fish (1989 year class), with the 1996 year class (5.7 million fish) being about average. The 1993-1995 year classes were all well below average.

Mean biomass declined from about 16,000 mt in 1986 to 10,500 mt in 1988 and then rose to 15,800 mt in 1992 due to recruitment from the strong 1988 and 1989 year classes. Biomass has since declined to a low of 5,300 mt in 1997. With recruitment from the 1996 year class, mean biomass increased slightly in 1998 (5,500 mt). According to the Amendment 9 control rule for white hake, when biomass is below 6,900 mt, the stock is overfished, and the overfishing definition reference point ($F_{\text{THRESHOLD}} = 0.0$). The biomass-weighted F in 1998 was 0.47.

Thus, results of the most recent assessment indicate the Gulf of Maine-Georges Bank white hake stock to be in an overfished condition and overfishing was occurring in 1998.

For further information

Fahay, M. P. and R. W. Able. 1989. White hake, *Urophycis tenuis*, in the Gulf of Maine: Spawning seasonality, habitat use, and growth in young of the year and relationships to the Scotian Shelf population. Can. J. Zool. 67: 1715-1724.

NEFSC [Northeast Fisheries Science Center]. 1999. [Report of the] 28th Northeast Regional Stock Assessment Workshop (28th SAW). Northeast Fish. Sci. Cent. Ref. Doc. 99-08. 304 p.

Sosebee, K. A., L. O'Brien, and L. C. Hendrickson. 1998. A preliminary analytical assessment for white hake in the Gulf of Maine-Georges Bank region. Northeast Fish. Sci. Cent. Ref. Doc. 98-05. 63 p.

Summary Status

Long-term potential catch (MSY)	=	unknown
Biomass corresponding to MSY	=	$B_{MSY} = 22,300$ mt
Minimum biomass threshold	=	6,900 mt
Stock biomass in 1998	=	5,500 mt (Implies an overfished condition)
F_{MSY}^1	=	0.24
$F_{TARGET}^{1, 2}$	=	0.12
$F_{TARGET98}^1$	=	0.00
Overfishing definition	=	$F_{THRESHOLD}^{1, 3} = 0.00$
F_{1998}^1	=	0.47 (Implies overfishing was occurring)
Age at 50% maturity	=	2.5 years, males 2.8 years, females
Size at 50% maturity	=	32.7 cm (12.9 in.), males 35.1 cm (13.8 in.), females
Assessment level	=	Age-structured
Management	=	Northeast Multispecies FMP

$$M = 0.20$$

$$F_{0.1} = 0.14$$

$$F_{max} = 0.24$$

$$F_{1998} = 1.09^4$$

¹ Biomass-weighted F.

² At B_{MSY} .

³ $F_{THRESHOLD} = F_{MSY} = 0.24$ when biomass exceeds B_{MSY} . When biomass is between B_{MSY} and $\frac{1}{2} B_{MSY}$, $F_{THRESHOLD}$ is the maximum F that allows rebuilding to B_{MSY} in ten years. When biomass is between $\frac{1}{2} B_{MSY}$ and the minimum biomass threshold, $F_{THRESHOLD}$ is the maximum F that allows rebuilding to B_{MSY} in 5 years. When biomass is below the minimum biomass threshold, fishing mortality should be as close to zero as practicable.

⁴ Fully-Recruited F.

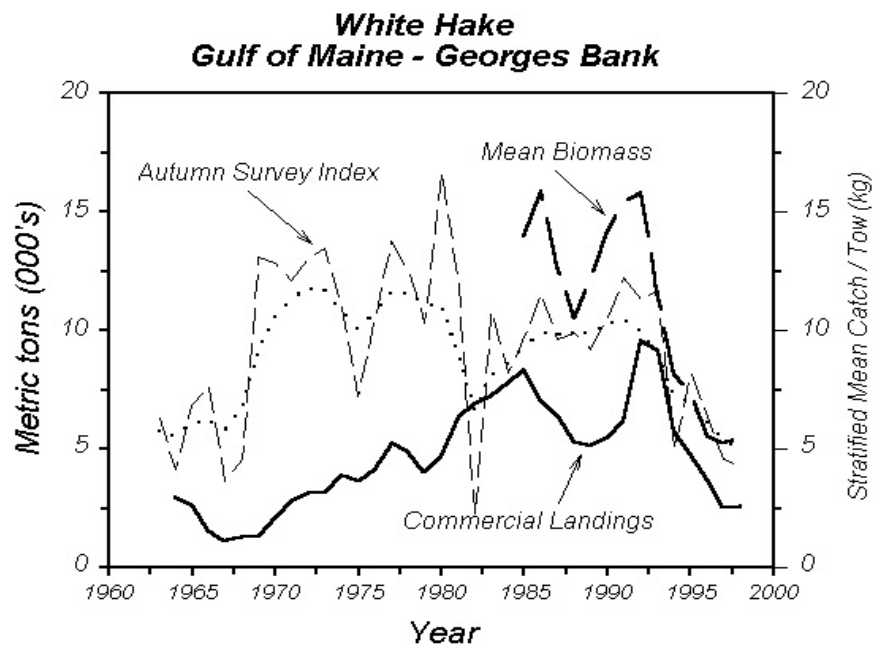


Table 17.1 Recreational catches and commercial landings (thousand metric tons)

Category	Year										
	1979-88 Average	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
U.S. recreational	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Commercial											
United States	5.8	4.5	4.9	5.6	8.5	7.5	4.7	4.3	3.3	2.2	2.4
Canada	0.7	0.6	0.5	0.6	1.1	1.7	1.0	0.5	0.4	0.3	0.2
Other	<0.1	-	-	-	-	-	-	-	-	-	-
Total nominal catch	6.5	5.1	5.4	6.2	9.6	9.2	5.7	4.8	3.7	2.5	2.6